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The Language of Science.

NOT long ago we published a complaint that young persons were repelled from the study of botany because of the hard Latin and Greek names which were given to the plants. We have never discovered any basis for this charge, and find no reason to believe that the science would have more devotees under any system of nomenclature which could be devised. It is not meant by this that scientific names of plants could not be improved or that better rules for naming them could not be framed, but there is no evidence that the imperfections of the system are so serious as to deter any one from studying plants or to hinder to any appreciable extent those who have begun the study. A new charge, but one somewhat similar in its character, has recently been made, which perhaps deserves a word of consideration. In his address before the Florists' Convention (see p. 421), Mr. E. S. Carman, while recognizing the necessity of a plant nomenclature of general application, and therefore accepting Greek and Latin names as the best, stated nevertheless that the words which botanists use to express processes, conditions, etc., in the life of plants are so absurd, irrational and preposterous that the study of botany is rendered repulsive to these young people. Mr. Carman's paper was on hybridizing, and to prove his case he cited such words as "dicœcious," "monœcious," "gyno-dicœcious," "proterandrous," and so on, stigmatizing them as bombastic and abominable.

In the first place, it may be said that young people, or old people for the matter of that, who study botany as they should, and investigate plants themselves instead of learning lessons from books, have occasion to use scientific language only when they have some scientific ideas to express. Just as soon as one has a new idea there comes the necessity for a new word. Mr. Carman himself uses such big words as "organography," "morphology," etc., because he wishes to express a well defined science, and these terms have been selected for that use. He cannot express his meaning so distinctly and concisely in any other way, and yet these words are as strange to the illiterate and to the young person as are any of those he uses to prove his case against the botanists. The fact is that the same charge can be brought against any other study. At the very outset of his arithmetical studies the child must become familiar with such hard words as "multiplicand" and "dividend" and "minuend," and in geography he is immediately confronted by "hemisphere" and "meridian," "equator," and many more which are quite as trying to him as any botanical term. There is no need of bringing illustrations from other sciences. Open any systematic treatise on birds or insects, on geology or medicine, and just as many "hard words" will be found as the botanists use. The reason for this is that scientific language is necessary in a scientific treatise.

But what do the critics mean by "hard words"? Not long words surely. If this question was pressed a little, perhaps the answer would be "words that are not in common use." But the subjects discussed are not subjects of ordinary conversation, and, therefore, there can be no common word to represent the ideas and processes in question. Perhaps Mr. Carman, who considers "dicœcious" a hard word, would say that "deciduous" was an easy one. This is simply because the latter is more frequently used, but to the "young person" who learns them one is quite as easy as the other. But however this may be, the fact remains that it is utterly impossible to write a scientific treatise unless there are specific terms to represent the objects, the attributes and the processes which must come constantly under discussion. The only question is how should the words that are needed be formed. Now, the same reasons which make it advisable to use Latin and Greek for the names of plants, and in fact for technical names in all sciences, would seem to imply that the roots of these universal classics should be used in forming all the new words in scientific language.

This language is not constructed primarily to make science attractive to the young, but to furnish a means of complete and precise expression for those who are prosecuting particular studies. Any one with a slight acquaintance with Latin and Greek can easily form a word which will accurately express a new idea, and the reader will comprehend its meaning even if he has never seen it before. And many people who have never studied Latin and Greek, but who have become familiar with the roots of certain words which are often used in any given science, can not only understand new terms, but can construct them in correct form. Hugh Miller was not acquainted with any classical language, but he used the Latin and Greek terminology with all the facility of a skilled linguist.

Of course, all this is elementary doctrine, and there ought to be no necessity for such an argument even in a popular journal. But we believe that botany should be studied much more generally by young people than it is, and, while we have no fears that they will be deterred from it because scientific language is employed, we do have fears that some of them or their parents may be discouraged by careless criticisms, which magnify supposed difficulties, or by artful ridicule of the methods of the most advanced students of the science.

IT may be that some of the criticisms upon the management of the Yosemite Reservation have been unduly harsh; but since the matter has become a subject of general discussion, and the plain truth is slowly appearing from out the mass of conflicting statements, it is growing more and more evident that the crowning charm of wild beauty which invests this valley is vanishing as swiftly as possible before the blighting touch of man. The details of the defacement are too sickening to recapitulate; but mutilated trees, meadows scarred with the plow, and acres of blackened stumps well justify the statement of John Muir, who has known this valley for more than twenty years, when he says in the *Century Magazine* that everything accessible and destructible is going more rapidly to

ruin here than in any other valley of the Sierras, although this is the only one under the special protection of the Government; and he adds that by far the greater part of this destruction of the charm of wildness is of a kind that can claim no right relationship with that which necessarily follows use. But the larger features of the park, especially its waterfalls and streams, are in danger from attacks upon the region without its borders. The time is at hand when lumbermen will begin to clear away the woods and herders will drive in sheep and cattle to browse and trample the life out of the ground, and the result will be that not only the valley will lose the frame-work of the surrounding beauty, but the streams which flow into it will become turbid and irregular torrents.

With these facts in view one can hardly understand why Congress should any longer delay action upon the bill offered by General Vandever, which extends the limits of the reservation so as to include the watershed of the important Yosemite streams and many beautiful groves and cañons, mountain lakes and meadows. The Act in its provisions is similar to the Tulare Forest Bill which has so recently been enacted. The enlarged reservation is to be under the control of the Secretary of the Interior, who is to make regulations for its management. Of course, the administration of the original reservation will continue in the hands of the state of California. It is not to be assumed, however, that the good people of that state will suffer its name for public spirit, and for an enlightened appreciation of the value of this sublime scenery, to be clouded much longer by the brutality of the men who are willing to barter away its unique beauty for the price of a hay crop. A rational management of the extension of the reservation must exert a wholesome influence on the management of the valley itself, and, therefore, the sooner the new reservation is established and put under national control, the better. This will not only preserve the rare beauty of the region about the Yosemite proper, but it will help to rescue the wonderful valley itself from deliberate ravage, which the civilized world would look upon as a calamity.

Mr. William Little, who is a remarkably well informed lumberman, has published an open letter, addressed to the Montreal Board of Trade, on the wasteful mismanagement of timber lands in Canada and in this country. He says:

"Contrast the character of the timber manufactured at the present time, running largely into the different grades of culls, with the magnificent black walnut, black cherry, butternut, chestnut, hickory, buttonwood, whitewood, black and white ash, red and white oak, red and white pine which, when not used for fencing or fuel, were burnt up in the log-heaps of Ontario in Canada, and in New York, Pennsylvania, Ohio, Indiana, Michigan and Wisconsin in the United States, only a few years ago, and which, when manufactured, ran largely into the grades of selects and clear lumber. While hardly a thought is given to the matter by the people, we are almost face to face with a problem that must be quickly solved or disaster will surely and speedily follow.

"New lines of railway are being built or extended into districts dependent almost entirely on the timber trade for business; the carrying capacity of the lake marine is being increased at an enormous rate; cities, towns and villages, depending largely on the lumber industry, are enlarging their borders as if the supply was inexhaustible. But timber cannot be grown like a crop of corn; its growth is a matter not of years, but of ages, and when it is once gone it cannot be restored during the lifetime of those now living, while the really good timber of the north Atlantic and lake regions is not only not inexhaustible, as many suppose, but is actually almost exhausted.

"The forests of the vast territory extending from the confines of New Brunswick to the head-waters of the Mississippi are almost on the verge of immediate exhaustion, and yet, so ignorant or indifferent are the people of the United States to the seriousness of the situation, that they are even now higgling about what special restrictions they can impose upon Canadian lumber. Let them increase the duty by all means, if they like—the higher the better, in my opinion—for they will then the sooner know how grievously they have erred and how imprudent they have been when they are compelled to pay these duties themselves, and Canadians are able to get what prices they want for their lumber.

"But if we continue to stock American saw-mills with logs, taken from our already too scanty supply, to forestall the markets in advance of our own manufacture, and keep slashing away at our timber as we have always been doing, overstocking the markets as if it were something to be exterminated at any cost, and with the Government, the capital, and, I may say, the public opinion of the country, when not indifferent, all arrayed against the forests and animated with the same destructive impulse, we will no doubt soon be able to get rid of the timber, and to get rid at the same time of the most valuable property we ever had, or may ever expect to have, in our country."

The American Elm.

We published in the issue of June 11th a portrait of what may be considered a typical specimen of an American Elm (*Ulmus Americana*), planted by man, and allowed to develop during a hundred years all the grace and beauty peculiar to this tree. The American Elm, however, differs in its habit of growth considerably and assumes various forms as conditions are more or less favorable to its growth. A more recent number of this journal (Sept. 10th) gave an illustration of another form of this tree with pendulous branches which sweep the ground. A not unusual type of the American Elm is the one represented in our illustration on page 467. The trunk and principal branches of this tree are clothed along their whole length with short, lateral, feathery branchlets, giving to the tree the peculiar appearance which is well reproduced in our illustration. There seems to be no particular reason why some individuals should develop these lateral branches and why some should not. Many Elm-trees do it, however, and it is not an unusual sight to see two trees growing side by side under precisely similar conditions, the one with a naked stem and main branches, and the other clothed as fully as the tree of our illustration, which is, moreover, a remarkably fine specimen. It is growing on rich intervale land in the town of North Sandwich, in New Hampshire.

We are indebted to Dr. William Herbert Rollins, of Boston, for the photograph from which the illustration has been made.

Effect of Forest-Mismanagement on Orchards.

I do not intend here to rehearse the influence which the forest exerts upon fruit-culture by reason of its protection against cold and hot winds. The value of a properly disposed shelter-belt for the orchard is well understood. It is also well known that by opening up the country to the sweep of the northern winds the cultivation of the Olive in northern France was made impossible, and other such results of injudicious deforestation, of local as well as general character, are on record. I wish to show that not deforestation, but the mere mismanagement of the forest in the way of leaving large parts of felled trees in the woods and in allowing fires to run through the woods, works injury not only to the forest itself, but to the neighboring orchard. It is a well known fact that a large proportion of the beetle larvæ which infest living trees cannot exist in a thoroughly healthy and vigorously growing tree; those larvæ in particular which are found in the cambium layer between the wood and the bark would be drowned in the sap of healthy trees. They are, therefore, mostly found in those trees which, for some reason or other, are less vigorous or on the road to decay. When a fire has run through the Pine forest, or when a leaf-destroying caterpillar has ravaged the foliage and thus reduced the vigor of the trees, these beetles find a most favorable breeding place in the weakened trees, and their larvæ multiply rapidly and finish the work of destruction in short time. For this reason it is often necessary to cut millions of feet of lumber and cordwood at once, or it will be entirely ruined. While, then, these little insects—belonging to the families *Bostrichidæ* and *Scolytidæ*—are great enemies to the forest itself, there is no doubt that many of the insects injurious to our fruit and shade-trees find their most favorable breeding place in the trunks and limbs of the scorched or freshly felled trees. The frequent forest-fires and the failure of the farmer and lumberman in disposing of large parts of the felled trees must be considered as among

the principal causes of the prevalence in North America of these insect borers. The horticulturist may destroy the borers in his orchard or vineyard, but the mismanaged and maltreated forest makes a fertile breeding ground for them and replaces those destroyed by the watchful orchardist.

To substantiate the assertion, the following examples may be cited:

One of the most dangerous enemies of the orchard, the Flat-headed borer (*Chrysobothris femorata*) is found to breed in enormous numbers within the trunks of various forest-trees that have been injured by fire.

The Oak-pruner (*Elaphidium parallelum*), which does considerable injury to Apple-trees, is found under the bark and in the wood of Oak, Hickory, Elm and other forest-trees that have been recently felled and left in the woods or that have been reduced in vigor by fires.

Several other species of the same family, among which are *Prionus laticollis*, the broad-necked Grape-root borer, and others often injurious to the roots of the Grape-vine, breed in the trunks and stumps of forest-trees, especially Oak. *Pelidnota punctata*, a large Scarabæid beetle, which destroys the foliage of the Grape-vine, comes from the same breeding place.

One of the dangerous enemies to cultivated Blackberry-bushes, *Agrilus ruficollis*, the red-necked Blackberry borer, preferably breeds and multiplies in the wild Blackberry and Raspberry bushes that have been scorched by fires. *Amphicerus bicaudatus*, the Apple twig borer, very injurious to Apple and other orchard-trees by boring in the twigs, breeds in the roots of the Smilax vines which have been killed by fire.

The various species of bark-borers of the Scolytus family, which attack orchard and shade-trees, could be readily kept in check, but for the fact that they breed unmolested and multiply in fallen forest-trees. Such are the Pear-borer, *Xyleborus Pyri;* the Pear-blight Scolytus, *Phlœotribus liminaris*, and the Apple Tomicus, *Monarthrum Mali*. This list of injurious insects, which find most favorable conditions for development in the mismanaged forest and threaten the orchard, vineyard, park and plantation, could, no doubt, be largely extended.

It would be difficult to tell what in amount the loss from these borers may be. We have learned that insect ravages entail the loss of millions. Thus the loss from the Cotton-worm was estimated in one year at almost $30,000,000. And when we consider that the tree-borer does not destroy the year's crop only, but the crop-bearing tree itself, the accumulation of many years' growth and all the labor spent on it, we may readily see that, in proportion to the extent of orchards and vineyards, the loss must be considerable.

We have, then, here another illustration that all things in nature have their relation, and that if we interfere with their adjustment we are sure to throw them out of balance and suffer accordingly. We have another lesson, which teaches that cultural and forest-conditions are closely related to each other, and that, as we disregard proper forest-management in utilizing nature's gifts, we must bear the consequences in other directions.

Washington, D. C. *B. E. Fernow.*

September in the Pines.

SOME flowering shrubs like Cassandra blossom with the first warmth of spring, while others in the same family hold their flowers back from one to four or five months later. Not only is this true of the shrubs, but herbaceous plants succeed each other in the most wonderful and varied beauty from early spring until late autumn. But by the middle of September flowers are scarce on shrubs and trees. Now and then we find a belated spike of Clethra or a fragrant cluster of White Azalea, but none the less attractive is a ramble among the Pines than it was when they were flushed with the glowing colors of the Laurel and Azalea or lighted up with the pure masses of White-Fringe and Dogwood, and fragrant with Magnolia and Wild Rose.

There is no dearth of flowers now, however, only their character is changed. Fragrance and delicacy seem to have given place to bold masses of azure and gold which blend with the gorgeous coloring of the ripening leaves of shrubs and trees. In damp places the Grasses and Sedges are starred with the lovely Sabbatia and purple Gerardias—the larger *G. purpurea*, the slender *G. tenuifolia* and the broader leaved *G. auriculata* are all here. The Meadow Beauty (*Rhexia Virginica*) is still a beauty, with blossoms and urn-shaped seed-pods. This species is common in all damp places, but *R. Mariana* is scarce here. For years I had vainly searched for this plant, and then to suddenly come upon it in a place which I had gone over many times was a surprise. The leaves are more narrow than are those of *R. Virginica*, and the flowers are paler and somewhat smaller.

The closed Gentian adds its blue clusters of bud-like flowers to our collection, and a few long sprays of Swamp Loosestrife (*Nesæa verticillata*) are admitted as well as some bunches of purple Eupatorium. The little Orchid—Ladies' Tresses—must not be ignored, as some of them are delightfully fragrant, and prized all the more as its more showy companions lack this quality. The orange colored Polygala (*P. lutea*) is still abundant, and the purple heads of *P. sanguinea* are mingled with them.

Pond Lilies are growing luxuriantly in ditches which have been cut through Cranberry bogs. It is astonishing how quickly these Lilies find and appropriate such places, together with Brasenia, Limnanthemum and other water plants. Some parts of these ditches could not be more beautiful if they had been stocked and tended with the greatest care.

Great clumps of the Cinnamon Fern grow along the banks, and also the Regal Fern, together with Woodwardia and Dicksonia, and the Club-moss is creeping at their feet. The Ferns, too, find a place in our collection. By this time they are fully matured and do not wilt as they did in early summer. Now dipping our mammoth bouquet in water we place it in the shade and drive home for the next pleasure, which is the decorative arrangement of this wealth of material.

On the west side of one of my rooms are two windows that reach the floor with only three feet space between them. In this space is a small table. The windows are draped in white. On the floor in front of each window I set a large vase, in which are placed the tall Ferns, with a few long sprays of Golden-rod. The Ferns on either side reach the table, and are glorious in the full light and graceful amid the folds of the white drapery. On the table I mass smaller and more delicate Ferns with sprays of Sabbatia. This is the centre of an arch, and no description can do it full justice. The remainder of the collection find places in other parts of the house. Some of the brightest colors look well before neutral tints of heavy drapery.

But our crowning work can be made with the Water Lilies and the other water plants. With a large, old-fashioned tea tray and a good sized, shallow glass dish, with an abundance of Moss to conceal the tray and edge of the dish, one can make a pretty piece of decorative work or a bit of landscape gardening if you please. Beautiful little Sedges and small tufts of some of the wild Grasses are useful here, and tiny Ferns around the edge of the water are charming. All who have the time and inclination for this kind of work will find no end of diversion in such studies of artistic arrangement. And when completed, with a little care the miniature garden will last several weeks.

Vineland, N. J. *Mary Treat.*

Botanical Work at the Stations.

THERE are now twenty-nine botanists employed at the various experiment stations, and several horticulturists are doing some botanical work. In the preparation of a bulletin, which is to set forth the character of their senders, a list of ten questions has been submitted to all of them, and the first of these questions is, "What botanical problems appear to you to be of most immediate importance in your state?" It is not to be expected that the problems calling for solution in Maine and Minnesota would be the same as those in California or Florida. However, in making a summary of the replies, one is surprised to find that far the most prominent subject named is "fungous diseases of cultivated plants." There are sixteen who announce this as among the most pressing lines for investigation. In addition to this, several name the particular trouble to be looked into; as, for example, the Peach yellows, bitter rot of Apples, Cotton blight (two), Sweet Potato rots. It is interesting to note that there has been a quite natural division of the fungous subjects among the botanists. Thus, for example, those of the prairie region are confining their attention mainly to the smuts and rusts of the coarser field grains, especially Wheat and Corn. In the south the leading subject for the fungologist is the Cotton crop, while in the central states the vineyard, and in the eastern states the garden crops and those of the greenhouse are more particular subjects of study.

The study of Grasses and forage plants is considered next in importance; some, especially in the far west, are testing the wild sorts under cultivation. The states engaged in this important work are as widely separated as Vermont, North Carolina, New York, New Jersey, Nevada, Nebraska, Minnesota, Michigan, Maine, Kentucky, Iowa and Colorado. In some

states it is the Grasses particularly that are under investigation, while in others the Clovers, Lucerne and other leguminous crops are being considered.

Next in order of importance comes the subject of weeds. How best to check their spreading can only be determined by a thorough knowledge of their habits; and their eradication calls for a concerted action that can be brought about by wide-spread information and an urgent appeal.

Following the weeds is the consideration of the long neglected subject of our forests and forest-trees, and next comes the question of plants for barren lands. This title is somewhat obscure, as it may mean forests or Grasses or some other plants of less intrinsic value to be used to prepare the way for something better.

But few of the botanists are engaging in the fertilization of plants, including hybridization and all that is understood by breeding. Three indicate this as one of the pressing subjects for inquiry. It is here again that the line of the station horticulturist approaches close to that of the botanist, and very likely a large part of the station cross-fertilization work will be carried out by the former.

Two have selected the relations of climate to vegetation, and two more testing seeds somewhat after the methods of the German seed-control stations. It has already been found that our seeds are not as foul or our seedsmen as vicious as had been alleged. In the far west two station botanists contemplate a study of the influence of irrigation upon vegetation. And still farther west and north, where state-making is not a thing of the distant past, the making of a state flora is considered one of the first things for the station botanist to do.

To come down to a small ending of the list, in more ways than one the returns show that at least one botanist considers bacteria among the more important subjects for study.

It is seen that the topics are broad and various, and for their satisfactory study there needs to be a wide diversity of talent.

Rutgers College. *Byron D. Halsted.*

New or Little Known Plants.

A New Cornus.

A VERY puzzling Dogwood has been known for some time to be growing in the region of the Great Lakes. Occasional specimens received were referred to *C. stolonifera*, but not without contradicting some of its most essential characters. In an early day it had been collected by Bourgeau in the valley of Lake Winnipeg and along the Saskatchewan, and much later by Dawson, in the same region. It is also to be found among Garber's collections from Presque Isle. Macoun collected it at Point Pelee and Lake Nipigon, as well as in the Cypress Hills of the Northwest Territory.

In 1886, however, during a botanical survey of northern Minnesota, abundant material in fine condition was secured by Professor L. H. Bailey, and distributed by him as *C. stolonifera*, to which species Dr. Gray had referred it. Professor Bailey was well acquainted with this perplexing form about his early home in southern Michigan, and was never satisfied that it could be really *C. stolonifera*. The Minnesota material was collected along the north shore of Lake Superior, at Vermilion Lake, and at Hunter's Island, upon the British border. In a critical study of all the North American species of Cornus it became apparent that this perplexing form represented a distinct species, which was very naturally dedicated to Professor Bailey.* Its range, as at present understood, is about the Great Lakes, especially Lakes Michigan and Superior, and extending northward and north-westward into Canada. Its occurrence in the mountains of Wyoming, near Fort Bridger, suggests a possible southern extension in the mountain region.† The species can be distinguished from *C. stolonifera* by its erect habit, being not at all stoloniferous so far as known, by its much duller and browner bark, its pearly white fruit, with a large, flattened, square-shouldered stone, and by the white woolliness of the lower leaf-surfaces. It grows over the sand dunes about the lakes, "often in the loosest, shifting white sands," as Professor Bailey writes, and flowers continuously all summer, from June to September. As a handsome, long-blooming shrub, adapted to the sandiest soil, *Cornus Baileyi* well deserves cultivation.

Crawfordsville, Ind. *J. M. Coulter.*

* Cornus Bailevi, Coulter & Evans. Erect shrub, not stoloniferous, reaching a height of six or eight feet, with reddish brown, mostly smooth, branches; branchlets and inflorescence pubescent to woolly; leaves from lanceolate to ovate, acute or short acuminate, appressed-pubescent to glabrate above, white beneath and with woolly hairs variously intermingled with appressed ones; flowers in small, rather compact, cymes; fruit white; stone decidedly compressed, flat-topped, with a very prominently furrowed edge, much broader than high.—*Revis. of Corn. Bot. Gazette*, xv., 37 and 87.

† The Fort Bridger specimens were collected by the Hayden Survey, and named *C. pubescens* by Professor Porter, a decision which really came nearer the truth than *C. stolonifera*.

Foreign Correspondence.

London Letter.

THE fortnightly meetings of the Royal Horticultural Society have this year been exceptionally interesting and useful. Every meeting produces collections of plants of special value in some department of gardening, or some new introduction of more than ordinary promise. There can be no question of the important part such meetings play, or at any rate should play, in the diffusion of horticultural knowledge, for even connoisseurs find them instructive and interesting. In a previous letter I mentioned an exhibition of cut specimens of all kinds of spring-flowering, hardy trees and shrubs, supplied from the Royal Gardens, Kew, and several nurserymen who are strong in this department. Amongst these is the Messrs. Veitch, whose collection in the Combe Wood Nurseries is rich in rare and beautiful hardy trees and shrubs. Few meetings are held at which there are not specimens exhibited from this nursery. At the last meeting the exhibit consisted of a large collection of handsome-leaved hardy trees and shrubs, with a few autumn-flowering things amongst them. I noted the most striking of the plants, which are as follows:

Quercus dentata.—A Japanese Oak of extraordinary character. The leaves are fifteen inches long by nine inches in width, sessile, with large irregular lobes and almost leathery in texture. In autumn they assume a rich amber and red color. The young leaves are clothed with a soft down, which falls off as they mature, leaving them smooth and green. At present this plant is rare, but the size and beauty of its foliage, and the fact that it is quite hardy and grows freely even in the cold parts of Scotland, ought to make it a favorite.

Salix rosmarinifolia.—This is an ornamental Willow with linear leaves five inches long, deep green on the upper surface, silvery beneath, the general appearance being that of a Rosemary, as indicated by the name. It is included by Hooker among the forms of *S. repens*, a British species, but he describes it as having leaves from two to three inches long. It is supposed to have been found by Sherard in the last century in bogs in Scotland. It is worth a place in every garden for the sake of its pretty foliage.

Hymenanthera crassifolia.—A New Zealand shrub which has proved hardy in the south of England. It grows to a height of about four feet and forms a dense bush, covered with linear gray-green leaves, and in autumn with clusters of pearly white berries.

Aristotelia Macqui.—In the south of England this free growing shrub becomes ornamented with a heavy crop of deep crimson berries, which change to black-purple when ripe. It is usually grown for the sake of its evergreen, handsome foliage. In sheltered places it forms a shrub about eight feet high. Messrs. Veitch exhibited branches of a variegated form, in which the leaves are partly bright, creamy yellow. If as hardy as the green form this should prove a valuable shrub.

Ligustrum Simoni, a distinct looking Privet in the way of *L. Japonicum*. The leaves are coriaceous, elliptical, deeply channeled and about five inches long. The inflorescence is a terminal panicle of small white flowers. It is said to be the same as *L. compactum*, a Himalayan species introduced in 1875.

Cornus Spathii is the garden name for a variety of the Siberian Dogwood (*C. Sibirica*). It is one of the handsomest variegated leaved shrubs we have seen, and if it proves as hardy as the type it will be a most valuable acquisition. As exhibited, it had leaves five inches long by three inches in width, and at least two-thirds of each leaf was colored a rich cream-yellow. It obtained a certificate in July of last year. The type is one of the most useful undershrubs we have, the crimson color of its stems, especially in winter, being particularly bright and cheerful. We do not succeed with the Dogwoods of America. *C. florida* we know chiefly from descriptions and pictures of it, for it does not flower here.

Stephanandra flexuosa, a monotypic genus allied to Spiræa. It was introduced from Japan to St. Petersburg by

Maximowicz some twenty years ago, but has been known in commerce only about seven years. It is hardy, deciduous, and has slender, flexuous branches with deeply cut leaves, which are pubescent beneath. The flowers are small, white, and are borne in large, loose terminal panicles. Altogether the plant is sufficiently striking to find favor as a hardy border shrub.

ALNUS TINCTORIA is a new Alder remarkable for the size of its leaves, which are about six inches long and broad, the edges biserrate and the color a rich green. It is probably Japanese.

ACER COLCHICUM RUBRUM has Ivy-like foliage, which, when young, is colored rich crimson-brown. It grows quickly and forms a good-sized tree. It is one of the most attractive of the larger ornamental-leaved Acers.

Other noteworthy exhibits were *Styrax Japonica*, in fruit; *Cydonia Japonica Moorloosii*, which has the richest colored flowers of all the forms of this plant; *Daphniphyllum glaucescens; Salix laurifolia*, with large, glossy, dark green foliage, and *Ligustrum lucidum tricolor*, with large oblong leaves colored bright yellow and green, and when young tinged with crimson. This plant is said to develop its color only when grown in pots under glass.

The summer bedding in the principal parks and public gardens in the neighborhood of London is this year unusually good. The year has been unfavorable in regard to weather, cold, sunless and wet days having been far too frequent to suit this kind of gardening. In spite of this, however, there are many successes and not a few of more than ordinary beauty. Hyde Park devotes a long stretch of ground bordering Park Lane entirely to summer bedding, which is always worth seeing and is especially good this year. The beds are very large, in shape either round or oblong, and they are separated by long sweeps of green turf, of which a wide strip runs from one end to the other. At intervals along this there are perfect specimens springing from the turf of Phormiums, Phœnix, Livistona, Bamboos and masses of Purple-leaved Canna. These prevent anything like monotony, and are, moreover, a very attractive feature in themselves. In the beds perhaps the most ornamental combinations are mainly due to a liberal use of Fuchsias of all kinds. Some of the beds are entirely filled with big half-specimen plants covered with flowers, and car-

Fig. 58.—Cornus Baileyi.—See page 464.

peted with Mignonette, Iresine or Oxalis. Specimen Fuchsias, Heliotrope, Plumbago and Ivy-leaved Pelargoniums are grouped about on the lawn near the trees with excellent effect. An enormous bed is entirely filled with well grown specimens, four feet high, of pink-flowered Ivy-leaved Pelargoniums, with a few plants of variegated Maize scattered amongst them, the ground being hidden by a blue-flowered Viola. An edging of a narrow-leaved, elegant, variegated Coltsfoot Grass heightened the effect of a massive bed of crimson-flowered Begonias. Adrien Robini is an erect, glossy, crimson-brown Canna of great value for this kind of work. Chrysanthemum Precocité entirely fills several large beds, and proves itself a first-rate bedding plant. In another place there is a round bed twenty-five feet across filled with *Musa Ensete*, *Eucalyptus globulus* and Castor Bean, margined with a massive broad band of *Funkia Sieboldii*. Another bed of the same size is planted with the crimson Castor Bean and *Abutilon marmoratum*, edged with Silver-leaved Pelargonium and blue Lobelia. *Erythrina Crista-galli*, bordered with *Funkia grandiflora*, is an excellent piece of gardening, the vigor of growth and wealth of flower being perfection. Visitors to this park should not miss the fine piece of natural gardening on the east end of the Serpentine. The grouping of the trees and shrubs, the sweep of lawn, the planting of the stream border, which runs from the foot of a cascade—in short, the whole arrangement being delightful; wild rabbits and wood pigeons feeding quietly on the lawns add considerably to the naturalness of the effect. Large specimen Palms, Bamboos, Musas, Strelitzias, Cordylines and Tree-Ferns are tastefully arranged amongst the permanent shrubs.

Regent's Park is quite as good in its way. The most attractive beds are filled with *Celosia pyramidalis*, about a yard high, with heads of flowers as large as those of the Pampas Grass, and varying in color from pale yellow to deep crimson. Nothing could be more beautiful, the habit of the plant is so elegant and the colors so dazzling. These plants are raised from seeds sown toward the end of April, and they are grown under glass until they are in flower, usually about the end of July. They are then planted in the beds, and they continue in beauty until severe frost comes to cut them down. Cockscombs are similarly grown and bedded. The borders and beds generally in this park are finer, more tasteful in arrangement and better grown than I have ever seen them.

The same may be said of Hampton Court. One of the most attractive beds there is filled with a Begonia called Worthiana, which is by far the best bedder amongst tuberous Begonias. It is dwarf, forms a large tuft of branches with narrow foliage, and is heavily laden with bright scarlet flowers, which in form resemble those of *B. Boliviensis*.

London. *W. Watson.*

Cultural Department.

Notes on American Plants.

Hibiscus militaris (the Halberd-leaved Rose Mallow) begins to bloom later in the season than the common swamp Rose Mallow (*H. Moscheutas*). It is a smoother plant, with divided leaves, and its flesh-colored flowers are a little smaller than those of the other. Its natural home is on river-banks, while the other grows in marshes along the coast. But both do finely in ordinary garden soil, come into flower at a season when they will be most appreciated, and are always admired by lovers of flowers. Now that the Hollyhock disease is becoming so widely distributed, these Mallows, which seem to be less liable to attack, ought to become better known.

Gentiana alba (Whitish Gentian) is a fine native perennial for cultivation. It is rather rare, however, and difficult to obtain in large quantities. In Gray's "Manual of Botany" it is described as much earlier than the common closed Gentian (*G. Andrewsii*); but with us in cultivation there seems to be little difference in its time of flowering. The nearly white flowers are open, and in a thick cluster at the summit of the strong, erect stalks. It is a more southern species, and is very rare in New England, if indeed it is found there at all.

Aster corymbosus is one of the common species of wild Aster, which is useful for planting in dry, shaded localities. It is a low-growing species, seldom two feet high, and bears an ample, but loose, corymb of purple and white or yellow and white flowers an inch wide. The leaf is much like *A. cordifolius* in shape, but the zigzag stem is quite different. It is one of the easiest species to transplant.

Aster puniceus is one of the tallest species we have, often over six feet high, and bearing an abundance of its large, showy, violet-purple, or sometimes nearly white, flowers, over an inch wide. There are varieties of this, smaller plants, with much inferior flowers, but in the true type the largest plants make a fine display when in bloom. It seems to prefer cool locations and a moist or wet soil.

There is a fine display of Golden-rods now in flower. *Solidago lanceolata*, with long narrow leaves and flat heads of small yellow flowers, is one of the earlier species. It seems to prefer moist banks. *S. latifolia* (Wide-leaved Golden-rod) has broadly ovate leaves and a zigzag stem, about two feet high, and bearing numerous pretty bright yellow flowers. Its wide and abundant foliage is of a dark shade of green, and contrasts well with the flowers. Another pretty plant is *S. puberula*, of sandy plain land, growing from one to three feet high, and bearing a dense, prolonged panicle of pretty yellow flowers. Another interesting species growing in cool peat bogs and on mountain-sides is *S. uliginosa*. Its stout stems are not rarely four feet high, and the long head or panicle of yellow flowers varies from six to eighteen inches in length in the largest specimens. The Sweet Golden-rod (*Solidago odora*) in its general appearance differs little from many others, but its leaves when crushed give a pleasant odor and an agreeable flavor when eaten. All of these are easily transplanted in early autumn, and do well in any ordinary garden soil.

Our native perennial Sunflowers are an interesting genus of plants, most of which are in flower about the first of September. There are nearly sixty species and varieties in North America, and no doubt many which have never been in cultivation are valuable for this purpose. *Helianthus giganteus*, one of the tallest, has rough and hairy stems, three to ten feet high, and numerous good-sized, pale yellow flowers. It does well in a light loamy soil, though its natural home is in wet, swampy land. *H. divaricatus*, in favorable localities, is a pretty plant, but in dry and barren soils, where it is sometimes abundant, it is not showy. Its height is from two to four feet, according to the soil from which it comes. Its flowers are good-sized and bright yellow, two inches or more wide. It is not so handsome or valuable a plant as the *H. dicapitatus*, which has larger and more numerous leaves and flowers.

Southwick, Mass. *F. H. Horsford.*

The Hardy Flower-Garden.

THE bedraggled appearance of the borders after a wet period, already reminds us that it is time to prepare for the next year's display of perennials. Where annuals have been used to any extent in the flower-garden, one now realizes more fully the ephemeral nature of their beauty, and determines that for the future they shall take a secondary position to plants of a more enduring character. It has already been noted that Narcissi are best planted at once, and the earlier the better. The same remark also applies now to all the members of the Lily family. To one who is just starting out to grow Lilies, the lists usually found in catalogues are long enough certainly, too long perhaps for a beginner, for many of the sorts included should never be planted by those who have not already had experience with this fickle genus. The list of Lilies which I have found to thrive perfectly in the climate of the eastern states would include *Lilium Batemaniæ*, *L. Hansoni*, *L. candidum*, *L. croceum*, *L. pomponium*, *L. tigrinum* and varieties, *L. umbellatum*, *L. elegans*, also known as *L. Thunbergianum*, all the varieties of *L. speciosum*, often called in English lists and periodicals *L. lancifolium*, and, of course, *L. superbum*, and *L. Canadense*, with its pretty varieties. Every one should also try *L. auratum*, but no one should have great expectations of its longevity; I have yet to see the place where this gorgeous Lily has become established. In conversation with a large Lily-grower the other day he said, "To keep *L. auratum* raise your bulbs from seed." But this does not give much encouragement to plant the fine bulbs that are annually imported from Japan, which I have never known to increase in size.

There are other things which should be planted at once, such as *Mertensia Virginica*, one of the most beautiful of native plants, which will succeed in any soil. The Trilliums, too, are now offered and should be planted at once. Try them in shady places where other things do not thrive, but remember that they die down early in summer, and give place to something else, which may be planted along with them. There are many Trilliums, and some are not showy or desirable for garden purposes, but *T. grandiflorum*, *T. stylosum*, *T. ovatum*, and *T. sessile*, var. *Californicum*, are sure to please. Those who have not tried *Camassia Cusickii* certainly should; but remember to plant it deep. It is the best of the Camassias, but *C. esculenta* and *C. angusta* are both good border bulbs that need no coddling. Dodecatheons are now coming to the

front as garden plants, and they include the most beautiful plants of the Primula family that North America can show. The Dodecatheons are sold under a variety of names of garden origin; but all are worth growing, even the poor, pale form of *D. Meadia*, now so often seen. Those who have not tried planting broken charcoal among the roots of Dodecatheons so planted last fall was a brilliant spectacle this spring. There is a host of varieties of this fine plant, but none can surpass the type, judging from a dozen varieties we have tried.

German Irises are best planted now, and they will obtain quite a hold in the new soil this fall and flower stronger and better next year for the change. Starved-out old clumps of this fine old

A Feathered American Elm.—See page 462.

should do so; it is said to deepen the color of the flowers several shades. *Primula Sieboldii*, one of the few really hardy Primulas, may now be planted with the roots near the surface. Strictly speaking, they are rhizomes and should not be covered more than an inch deep; they need a good mulch of well-rotted manure, which may be left on in spring. A bed Iris are too often to be seen in gardens. A pretty harbinger of spring is *Adonis vernalis*, whose bright yellow flowers are pleasing when there are few other than bulbous plants in bloom. It should be planted now. Alstrœmerias come to hand in the fall, mostly from Holland, which is, by the way, about the only place where one can obtain these most ornamental

and useful of hardy plants. They should be potted as soon as received and placed in a cellar until spring, when they may be set in their permanent positions out-of-doors and become established so as to take care of themselves in future. It is not safe to trust newly imported plants of Alstrœmerias to the severity of a New England winter, and the same may be said of the Hellebores which are thrust upon us at this season. These would speedily die if planted out when received. They must be protected in frames or in pots, and planted in spring. Afterward they can take care of themselves if a little mulching or covering of straw is placed about them.

The first frost will kill the tops of herbaceous Pæonies, and after that is the best time to lift and divide them or to procure new ones, remembering that Pæonies are, or should be, planted to stay, and the richer the soil is made the better the results will be in years to come. No garden should be without a few of the better named kinds, and those of French origin appear to be the best as a rule. Those who enjoy really good border flowers for cutting should try the Trollius. There are several species in commerce; the best of which are *T. Europæus*, *T. Asiaticus* and *T. Japonicus*. All three are distinct, and valuable for cutting. The flowers resemble huge Buttercups of a globular outline, which gives them their common name of Globe-flowers. They need a rich, moist soil.

I have found *Anemone Apennina* perfectly hardy, and it produces a charming blue flower, which opens early in April; but it takes two years to become well established. *A. blanda* is highly spoken of. It much resembles the Apennine Windflower, but blooms much earlier. *A. fulgens* I have known to live out all winter and flower gorgeously in spring. It is perfectly hardy in a cold frame, and is also fine for pot culture. These three Anemones are tuberous-rooted species, and may be procured now, as may the English and Spanish Iris, both of which are of the bulbous section known as Xiphion. These are rather fickle out-door plants, and ought to be wintered in pots in cold frames, and they will then flower beautifully in the border in May and June. In sheltered situations and more favored localities, both the Anemones and Xiphions would be fine garden plants.

If one has a corner of the garden where Grass or other things refuse to grow, Lily-of-the-Valley will thrive and is a good investment. If the bed is well and liberally prepared, they speedily take hold and thrive, and spread amazingly, where most other things fail. And, finally, every one should try the lovely native Cypripediums, and this is a good time to begin. Good, well-ripened crowns can be easily obtained and should be planted in a moist, shady place in rich mould. These Lady's Slippers also succeed well under pot-culture, and will do so year after year. *C. pubescens*, *C. parviflorum* and *C. spectabile*, with the lovely western *C. montanum*, with its raceme of sweet-scented flowers, are the showiest and best to grow. *C. candidum* and *C. arietinum* are both small, and *C. acaule* generally difficult to manage where it is not possible to imitate the natural conditions under which it grows.

South Lancaster, Mass. *O. O.*

Notes on Shrubs.

Gordonia Altamaha (*G. pubescens*) is flowering in the Arboretum, the first blossoms opening about September 8th. The plant here requires covering in winter, but it is in a too exposed and rather unsuitable position for one of its kind. There are doubtless many sheltered gardens and nooks in the city of Boston and vicinity where it would survive our winters without protection and eventually become a good sized shrub. We are unable to grow the great evergreen or Laurel Magnolia of the south, but this Gordonia, or Franklinia, as it is often called, seems of a hardier nature, and is well worth a trial in favorable places. Our seasons are so short that the later flower-buds do not develop into blossoms unless protected from early autumn frosts; but, in any case, enough flowers are produced to fully repay the little care given to it and the space it occupies. The beautiful, pure white, delicately fragrant, single Camellia-like blossoms expand three inches across, and the cluster of stamens within is bright yellow. The corollas do not persist long, however, and usually become detached and fall thirty-six or forty-eight hours after expansion.

Clerodendron trichotomum is another shrub which in this latitude would be worth growing in sheltered situations, and would well repay any care given to it. This is a Japanese plant belonging to the Verbena family, and although it is a good many years since it was introduced into Europe it is still very rare in this country. In this climate the stems are often so severely injured in winter as to seriously affect the blossoming. Last winter being less severe than usual, the branches were but slightly injured, and they now bear numerous cymes of sweetly fragrant flowers. This Clerodendron in its native habitat is a large shrub or sometimes a small tree. The branches are round, smooth and stout. The leaves are usually large, ovate, or sometimes cordate, pointed and more or less pubescent on both surfaces. When bruised they exhale a heavy and rather disagreeable odor. At a little distance the foliage resembles that of a small-leaved Catalpa more than any other familiar plant. The flowers are borne in large, much branched cymes on the ends of the branches. The blossom is white or sometimes slightly rosy colored, and expands about an inch across, and it bears four stamens and a slender pistil, which protrude about an inch from the mouth. The narrow, very slender tube of the corolla is about an inch in length, all the lower portion being enclosed in a loose, five-angled, purplish red calyx, which adds much to the showy effect of the flower, and which is conspicuous when enclosing the unopened buds as well as after the coralla has fallen. The flowers of a cyme open here in gradual succession, beginning about the first week of September. It is said that in Japan this plant grows high up on the mountains, and in rich soils produces panicles of flowers eighteen inches or more in length. It is possible that by getting seed from the extreme northern limits or the highest altitudes where this species grows, we may secure a race better able to withstand the severity of New England winters. Besides propagation by seeds, which will hardly have time to ripen in this latitude, this Clerodendron may be increased by cuttings from the shoots or roots.

An interesting plant for gardens is a Clethra from the southern states, to which Lamarck, in his "Botanical Dictionary," gave the name of the Cottony Clethra, or *Clethra tomentosa*, a name which was preserved by De Candolle in his "Prodromus" and kept up by Loudon and other early writers, although reduced to the rank of a variety of *C. alnifolia* by Michaux. It is a hundred years since it became known in European gardens. Later botanists, however, seem to consider it as but a mere form of the common Sweet Pepperbush (*C. alnifolia*), and we look in vain for any reference to it, either by name or description, in the last edition of Gray's "Manual." In some of the earlier editions of the "Manual," however, it is stated that "in the southern states are varieties with the leaves rather scabrous and pubescent or white-downy beneath."

Although the pubescent variety, which the earlier botanists knew as *C. tomentosa*, may not be entitled to specific rank in the botanical classification of to-day, it is, nevertheless, sufficiently distinct in the estimation of the horticulturist to merit some name which would indicate a difference from the ordinary typical *C. alnifolia*. In cultivated specimens in the Arboretum the leaves are larger than those of *C. alnifolia*. They are rugose above and densely covered with a grayish white tomentum beneath. In typical *C. alnifolia* the leaves are more smooth above and smooth and light green in color beneath, being quite destitute of any pubescence or hairs. The individual flowers as a rule are nearly twice the size of those of *C. alnifolia*, and they differ also in that the petals assume more of a bell shape and do not spread out so widely. The slender, pointed, terminal racemes of flowers average considerably larger, and many of them are supplemented by three or four well developed, but smaller, racemes, which, springing from the side near the base of the central one, come into bloom later than it does. To the horticulturist, however, the most important character lies in the time of flowering of the plants. Growing side by side in cultivation and under exactly similar conditions, the first blossoms of *C. alnifolia* open in the last days of July (July 22d in 1889 and 31st in 1890), while the first of those of what we may call *C. tomentosa* do not appear until three weeks later (August 12th in 1889 and 19th in 1890), by which time *C. alnifolia* is past its best flowering, although in woods and other cool places it is found much later. The latest buds of the tomentose variety are not expanded by the middle of October, so that they are usually destroyed by frost, and fruit is never matured. As this tomentose Clethra is only recorded from Virginia, Carolina, Alabama and other southern states, it is naturally not so hardy as our northern one. The flowers are quite as fragrant as those of *C. alnifolia*. On account of its extreme lateness in blossoming, this southern variety, or form, as it may be, seems likely yet to become recognized and valued by gardeners at least, and to find a place in every garden where shrubs of this class are prized.

Arnold Arboretum. *J. G. Jack.*

Phajus Humblotii.

AMONG the representatives of the genus Phajus this charming species must be considered as standing in the first rank, and as a fitting companion of the handsome *P. tuberculosus*, already noted in these columns.

P. Humblotii (often erroneously spelled and called *Humboldtii*) is only just beginning to be known in Orchid collections, through importations from Madagascar last year by F. Sander & Co. The first appearance, however, of this species was in the year 1880, when only a few plants were imported through the agency of a young French traveler, Léon Humblot, whose name Reichenbach attached to the plant by way of commemoration. It is a somewhat difficult plant to get at in Madagascar as well as to import successfully, hence the lapse of nine years between the first and second installment.

The small, pear-shaped pseudo-bulbs have two or three rings around them, and are furnished with a few large, stalked, oblong-acute plaited leaves over a foot long and three or four inches broad. The stout, erect scape rises from the base of the pseudo-bulb and will bear as many as twenty flowers, which are individually about two and a half inches across vertically. The flowers appear in April and continue until the middle or end of July. I do not mean that one spike of flowers will last this length of time; but where there are several plants, each opening at different times, flowers may be seen for three or four months. In May last I saw nearly two hundred spikes with flowers expanded, and a very charming sight they presented. The ovate-acute sepals and petals are of a soft rose color, sometimes mottled with white; the large spurless lip has a nicely frilled rosy front lobe, and reddish brown spots thickly covering the pale yellow side lobes, while the bright yellow, saddle-shaped callus presents a striking contrast to the surrounding colors and immediately attracts the eye.

One variety is already known—viz., *P. Humblotii alba*, originally known as *P. Henryi*. This is distinguished from *P. Humblotii* proper in having pure white sepals and petals, and the colors on the lip less deep in tone.

The natural surroundings of *P. Humblotii* are malarial marsh-lands, where it grows at the base of large trees, according to its discoverer, Monsieur Humblot, with plenty of heat and moisture. An imitation of these conditions as nearly as possible (with the exception of the malaria) seems to be the best way to treat this plant in cultivation. A warm, moist house, with as much diffused light as possible, suits it admirably; the soil may consist of rich fibrous loam and leaf-mould, and pots, which appear to be most suitable, should be well drained. The plants rest a little during the winter months and require but little water; with the approach of spring, however, the young shoots push forth, and the quantity of water must then be daily increased to make the plants grow vigorously and develop their flower scapes.

London. *John Weathers.*

Allamanda Schottii.—One of these vines occupies part of the roof on the west side of the plant-house here, covering 200 square feet. It is planted in a box three and a half feet long and two and a half feet wide and nine inches deep. The soil is a rich loam, and ordinary stove temperature is maintained, and in summer the plant is shaded from strong sun. With plenty of moisture in the air and water at the roots constantly, it never flags. A few applications of liquid manure when the box is full of roots, or a mulching of rich compost, is given, according to its needs. Being so strong a grower, it would soon have a starved look, and would produce smaller flowers with less generous treatment; as it is now, we have an average of 500 flowers open daily, and have had not less than 10,000 flowers this summer, averaging six inches in diameter.

Dongan Hills, Staten Island. *W. Tricker.*

Dipladenia atropurpurea is an easily grown, free-flowering species, with trumpet-shaped flowers as large as those of the old *D. Boliviensis*, but broader in the tube than that species, whilst the color is deep velvety crimson, except toward the base of the tube, where it is deep rose. This plant is almost forgotten now, but fifty years ago it was a popular stove-climber. Messrs. Veitch introduced it from Brazil, and it was awarded the Banksian medal as a new plant. Sir Joseph Paxton grew it at Chatsworth in combination with Stephanotis, a happy idea. The flowers last at least a week. It has been reintroduced by accident, a tiny plant having been imported along with a mass of Cattleya two or three years ago. It is now flowering at Kew. Other names for it besides the above are *Echites atropurpurea* and *Dipladenia violacea*.

Cyperus Natalensis.—A plant bearing this name has lately found much favor here among growers of decorative plants for market. It forms an elegant tuft of smooth, shining, bright green, channeled, arching leaves from two to three feet long and erect scapes four or five feet high, bearing flower-heads similar to those of *C. alternifolius*, but larger. It seeds freely under cultivation. Grown in a moist, warm house, it soon forms a handsome specimen. It is a gross feeder, and thrives on frequent doses of manure. The value of the plant is in its fitness for decorative work and its sturdy constitution. It keeps its healthy green color for months in an ordinary dwelling room. According to Mr. Clarke, of Kew, it is certainly not *C. Natalensis*, but a Mariscus, allied to, if not a variety of, *M. sparganifolius*.

Kew. *W.*

Grand Mogul and Jean Soupert.—While quite similar in habit and flower these two Roses are not identical—Jean Soupert was sent out by La Charme in 1875, and proved a very effective dark velvety Rose; Paul's Grand Mogul, of a recent year, is a seedling from A. K. Williams, and is a grand variety as seen in England. Neither of these three fine Roses does well in our country, probably on account of a lack of constitution to withstand our trying summer's sun; but wherever a grand, velvety crimson rose of the darkest and richest shade is desired our Rose-growers should plant Jean Liabaud; here we find freedom of growth, boldness of foliage, a rugged constitution and a flower once seen never to be forgotten—black and crimson displayed in a texture of velvet.

La France and Duchess of Albany.—Duchess of Albany is a sport from La France, and, while they have their resemblances, they are quite as distinct as Pearl and Sunset. By selecting a La France deeper in tint than the average and a Duchess lighter than its average one might hold in his hand two very similar Roses; but when the two are seen in a mass in any florist's forcing-house the most casual observer will note the new variety with admiration. They are quite similar in constitution, Duchess of Albany being the less liable of the two to drop its leaves; its bloom is slightly larger, too, under the same cultivation, while the color is a deep even shade of rosy pink without the light satiny sheen seen in La France. A dozen buds of Duchess make a cluster as distinct from a similar cluster from La France as a dozen buds of Catherine Mermet would be. Duchess of Albany is already highly appreciated among the florists as one of the most popular and most easily managed of the newer forcing Roses.

Richmond, Ind. *E. G. Hill.*

[These notes from Mr. Hill were called out by the statement in an English journal that the Roses Grand Mogul and Jean Soupert are now recognized as the same, and that it would probably be proved that La France and Duchess of Albany were also identical.—ED.]

Kniphofia (Tritoma) Corallina, just out of bloom, is one of the most desirable of the Torch Lilies or Red-hot-poker plants. It blooms freely for several months, and the flowers are most attractive, of a bright coral or orange red, without the clear yellow color on the lower side as in *K. Macowanii*, from which this is said to be a seedling. The plant is some five feet high and has a more spreading habit than the parent. Kniphofias cross so freely that it is interesting to raise seedlings from a collection, as many variations can be secured. *K. Corallina* bloomed this season from seedlings of 1889, quite in contrast to *K. Saundersonii*, which required three and four years' growth.

H. multiflorus, fl. pl., the double Sunflower most common in cultivation, is an excellent garden plant for a large border, vieing as it does with the African Marigold in bold effect of flower. It should be divided frequently, and unless grown in good soil the plants are much dwarfed. The perennial Sunflowers are all subject to attack of white mildew at this season and need attention with sulphur.

Helianthus lætiflorus follows closely in bloom *H. rigidus*, and is one of the best of native single Sunflowers. The habit is very neat, and the plant is about four feet high, producing a plentiful supply of deep yellow flowers of firm texture and some four inches in diameter. The disc of this species is yellow, or rather the purple base is covered with yellow anthers, which is the chief distinction between this and *H. rigidus* (the Prairie Sunflower), sometimes known as *Harpalium rigidum*, the disc of which is deep purple. The latter variety is also an earlier bloomer, coming on in July and August. A variety received as *H. Japonicus* is very slightly different from *H. rigidus*, to which it is inferior. A lot of seedlings from *H. rigidus* are decidedly inferior to the type; of a distinctly lighter

color, and, curiously, have less of the rambling tendency at the roots so characteristic of both of the above named varieties. They are both propagated by underground stolons, which ramble in all directions; and as the old stool dies annually one not familiar with this habit would conclude early in the season that the plants were lost. They are perfectly hardy, however, though disliking too much wet.

Helenium autumnale.—This showy yellow Composite is daintily sketched by Mr. Gibson in the current number of *Harper's Magazine*. It is so seldom seen in cultivation that attention should be called to its beauty and merits as a plant for the back border, where in August and September its many-branched heads of golden yellow flowers are very bright and attractive. The plant is a vigorous grower, four to five feet tall and a profuse bloomer. The individual flowers are from one and a half to two inches in diameter, entirely golden yellow, with a round button-like disc, from the lower half of which the flat, blunt petals slightly droop. Like many of our native plants, this Sneezewort is more appreciated abroad than at home. A dwarf variety is offered as *H. pumilum*, which is said to be an improvement on the type. My plants are seedlings from this variety, but apparently not true, as they differ little from *H. autumnale*, except in being somewhat improved in cultivation.

Desmodium penduliflorum, now in bloom, is one of the most graceful habited of hardy herbaceous plants, with a beautiful combination of flowers and foliage, though quite unattractive earlier in the season, when the leaves have an ugly habit of folding together in all dry spells. The flowers are a bluish red, but even with this drawback the plant is well worth growing for its distinctness and contrast to the usual showy autumnal flowers.

Elizabeth, N. J. *G.*

The Forest.

Preserving Small Forests.

THE greatest obstacle in the way of securing efficient action for the preservation of the public timber-lands arises from the lack of personal interest in the work. The public forests are spread out over a wide extent of territory; their character and condition are only partially known to the mass of those living near them, while the bulk of the people resident at a great distance from them know hardly anything about them and feel little interest in them. It is only the comparatively few who take broad views of things and feel that what concerns the public concerns them, and so are ready to make the public interest their own.

In the case of private forests there is no lack of personal interest. But the difficulty here is that the interest is so limited in duration that there is no adequate motive for a proper forest-management, while the limited extent of individual holdings usually prevents any such continuity of woodlands as will secure the best forest-results. Our system of land-tenure is such, and the habit of the people such, that any parcel of land may pass into the possession of a new owner at any time. The prospect of pecuniary gain or relief from a pecuniary exigency, however temporary, is enough usually to occasion the transfer of land from one to another, and most land-owners in this country hold their lands in the consciousness of such uncertain and limited tenure. Of course, the motive for planting or properly caring for woodland is correspondingly weak. Then, also, the length of time requisite to bring trees to their maturity operates as a discouragement to effort or outlay in planting or managing forests. The planter stands dismayed before the slowly rounding cycles of the Oak or the Pine. If we had a system of entails it might be different. Then one would feel that though his own life might soon come to an end his efforts and expenditures on his estate would not be wasted, but would accrue to the benefit of his family, his children and his children's children.

What is needed in our country, therefore, for the most successful dealing with trees in masses, with forests, is a personality whose life is as lasting as that of the trees themselves. The nation is such a personality. It lives on without any assignable or necessary limit to its duration. Hence the nation or state can care for the forests in the best manner and use them to the greatest advantage and with the highest profit in all respects, as is seen by the forest-management of European countries. So, also, there are lesser communities having such an unlimited duration of life, such as counties, towns, parishes and precincts. So, likewise, there are various corporations created by law which have no necessary limit to their life. Trust companies and guilds of many kinds are such. They can properly undertake any enterprise, no matter how much time it may require for its accomplishment. To such an unlimited life to grow a forest, even of Sequoias, is no more than for an ordinary person to grow a crop of Corn.

Why may we not avail ourselves of this larger, longer life for the establishment of forests something like the communal forests so frequent in Europe? While encouraging every farmer and land-owner to preserve a portion of his existing woodland and to plant shelter-belts, at least, why may not our counties and towns as such establish and maintain forests? In many of our counties and in many of our towns there are tracts of land, sometimes of large extent, often comparatively small, but many in number, which are unfit, perhaps, for ordinary cultivation, because they have a stony soil or are swampy and not easily drained, or lie upon steep hill-sides. As they are now they do not yield more than enough to pay the taxes assessed upon them. But while thus unprofitable in their present condition they could all be profitably used for the growth of forests; and why should not the county or the town—that is, the whole people in their corporate capacity—utilize such tracts by taking them out of their present unprofitable condition and devoting them to a remunerative forest-growth? In many cases such tracts would be given to the county or the town; in any case they could be bought at a very low price. Where there are several small patches of woodlands, or lands partly wooded, but separated from one another, these isolated wood-lots are useful now only for their small yield of fuel and inferior timber. If they were in the possession of the county or the town they could be combined, the necessary connecting land also being taken, so as to form such a continuous stretch of woodland as to possess more or less of the qualities of a forest, exerting climatic and other influences. Such a forest would also warrant better management and be more productive than smaller parcels. From time to time, also, the county or town could extend this forest-area by gift or by purchase, as the private person adds to his land, and as is done, in the case of their larger forests, by the European states.

Another advantage which would be gained by the town or county forest-system would be the more efficient protection of such forests. They would be protected from fire and other injury as no strictly private forest or forest belonging to the General Government would be; for the whole community would have an interest in watching them as their personal property; for every citizen would be an owner, and if fire should by any chance break out in such a forest, every one would be prompt to assist in extinguishing it.

Such forests could be cared for and maintained at a minimum of expense and a maximum of profit. This would be as the result of the general law, that a large business is more economically managed, proportionally, than a small one. The proprietor in this case, the town or county, or trustees or other corporate person, would always be able to command the requisite labor at the proper time. The work would be done under no such stress for immediate results as often urges the private land-owner; therefore the work would be done the more cheaply. If an existing woodland or several tracts were thus taken in hand, the necessary thinning could often be secured with little or no outlay of money.

There can be little doubt that a fair rate of interest on such an investment as this could be secured. Examples of the management of such limited and local forests abroad indicate this very plainly, while the sanitary influence upon adjacent agricultural lands would also properly be taken into account, and their general climatic effect, whenever they were of considerable extent.

Such forests would also incidentally become valuable as experiment stations, where many kinds of trees would be tested on whatever varieties of soil and exposure the grounds might furnish, and thus every landholder around might learn much as to what trees it would be most desirable for him to plant on his own premises.

A nursery would also, naturally, be a part of the equipment of such a forest, for the purpose of rearing trees to fill the places of those cut from time to time. And this might easily be made a source of revenue, by the sale of young trees to the land-owners of the town or adjacent region.

Finally, such a forest might have a value over and above any of a pecuniary kind, by being made a place of pleasant resort for the whole community—a place of special meetings on various occasions and of healthful recreation at any time. Thus the people would cultivate their forest, and it in turn would cultivate them, developing in them a taste for natural objects, opening their eyes to new beauties and new sources of delight, binding them together in society and endearing to them their dwelling-place more and more with the passing years.

Washington, D. C. *N. H. Egleston.*

Correspondence.

Some Northern Ferns.

To the Editor of GARDEN AND FOREST:

Sir.—The rarer Ferns found sparingly in the northern limits of the United States, but more generally in the eastern provinces of Canada, are generally away from the beaten tracks of tourists—amid mountain glens, in the neighborhood of waterfalls or nestling quietly on shaded cliffs above the reach of any but the most venturesome climber. The pretty little *Asplenium viride* is exceedingly rare. I have only met with it in the neighborhood of St. John. Here it is found in comparative abundance, in some half dozen places, hiding in the clefts of limestone rocks, and defying any but the most Fern-loving eye to discover its retreats. A few friends who have occasionally accompanied me to my "preserves" have been successful in its cultivation, and I have never seen it more beautiful even in its native haunts than it appears in a dainty dish in a friend's house. Two years ago the plant was set in a moderately deep glass dish with the small amount of earth which was gathered from the cleft of rock in which it was found growing. An occasional spraying of rain-water, with care to drain off the extra moisture that had gathered in the dish, is all the attention it has needed.

Pellæa gracilis I have seen only in the northern part of New Brunswick, in the neighborhood of Grand Falls and Woodstock and one or two of the tributaries of the St. John River. I shall never forget the sight that once met my eye on a projecting ledge of that most beautiful of New Brunswick rivers—the Madawaska. Growing from the clefts of rocks, and lifting up its delicate, pale green fronds on the grassy slope of the bank in the greatest profusion and luxuriance, the whole spot of wonderful green could have been covered by my umbrella. I had never seen the Fern before, and I have seen it but once since, but that exquisite little picture in the wilderness, with surroundings in perfect harmony, is a joy forever.

Scolopendrium vulgare is found in one locality in New Brunswick, but just where is unknown to me. Ten years ago the gardener of Mrs. Charles Connell, Woodstock, discovered the only specimen that has been seen in New Brunswick. A few Fern-lovers have searched diligently for the coveted prize in all the shaded ravines for miles around, but as yet without success.

A few weeks ago a party of adventurous students of the Nova Scotia Summer School of Science started one morning to find Moose River Falls in the recesses of the Cobequid Mountains. Adventurous, I say, because only one lady had ever visited the falls before, and here were at least twenty accomplishing the feat of scaling mountain heights, toiling through ravines, to catch a glimpse of one of the choicest bits of scenery to be found in eastern America. The Moose River, rising amid the heights of the Cobequid Mountains, acts much like other mountain streams at first, but suddenly makes a series of three or four mad plunges, the last and greatest being a leap of about a hundred feet into a basin in the form of an amphitheatre whose walls of perpendicular rock rise to the height of over 300 feet from the bed of the stream. Far up in the clefts of the rocks could be seen at least one *Woodsia* (perhaps *Ilvensis*) and *Aspidium fragrans*, which I had been trying to find for several years and now saw for the first time. It is found in two localities only in New Brunswick, and this was the second for Nova Scotia. Mr. A. H. Mackay found it again a few days after at Minnehaha Falls, another picturesque glen of the Cobequids, along with *Asplenium Trichomanes*, which, although described as common in Gray, has never been found in New Brunswick and but twice in Nova Scotia.

St. John, N. B. *G. U. Hay.*

Insect Enemies of Ampelopsis.

To the Editor of GARDEN AND FOREST:

Sir.—The Vine on my house, Japanese Ivy, has been devastated during the past summer by a green worm of considerable size. Many other houses on this street are similarly afflicted. It is gradually becoming a serious pest. Can you suggest any remedy? Is there any liquid application that could now be made to the roots of the Ivy that would kill the creature in its present state?

Beacon Street, Boston. *A.*

[In the absence of specimens or more exact information we would say that the injuries referred to are probably caused by the caterpillars of the so-called eight-spotted Forester (*Alypia octomaculata*), an insect which has sometimes caused much disfigurement to the foliage of both Japanese and American species of Ampelopsis in Boston and other cities. The moth which deposits the eggs which hatch into the troublesome larvæ expands from an inch to an inch and a half across the wings. It is of a velvety black color, and is marked by eight large conspicuous spots, two on each front wing being pale yellow, two on each hind wing being white. Unlike the great majority of moths these fly in the day-time, and observing persons, when crossing the Boston Public Garden, cannot have failed to notice these insects as they fluttered about the flowers of the dwarf Mountain Ashes, the dwarf Deutzias, the Spiræas and other plants in the latter part of May and in June. Where this insect causes serious injury to the Ampelopsis the moths should be caught and destroyed whenever possible. In destroying the caterpillars hand-picking may be tried on small plants. Where hand-picking is out of the question insecticides must be tried. Fresh Pyrethrum powder may be dusted on dry from a hand-bellows made for the purpose, or used in a liquid form by spraying with a strong syringe or a force pump. This insecticide kills by contact, and not by being devoured, and may be used without fear of injury to persons. White Hellebore may be found more efficient, as the caterpillars are poisoned by eating it, and it also may be used dry or in water. In a liquid form this and the Pyrethrum may be used at the rate of a tablespoonful to a gallon of water. Although a poison, the Hellebore is not nearly so dangerous as London Purple or Paris Green would be.

Kerosene emulsions might be equally effective, but these and the arsenical poisons, in inexperienced hands, are liable to injure the foliage, whereas the first two can do no harm to the leaves. The remedies should be applied as soon as the caterpillars are found on the Vines, usually early in July, and they should be repeated if found necessary. The pest cannot be destroyed by applications of anything to the roots of the plant.—ED.]

Practical Aid for Forests.

To the Editor of GARDEN AND FOREST:

Sir.—Professor W. A. Buckhout's article on "Restoring Wasted Forests," in your paper of August 20th, is one of remarkable interest and value. All its suggestions are excellent, and if they were heeded there would be little need of forest-tree-planting in the eastern states. The idea of the use of trespass notices is sensible and practical, and along with them a brief educational appeal of fifty or a hundred words, a request and a reason for being careful, printed in large, plain type on some durable material, and fastened to the trees everywhere, would soon have an improving and perceptible effect. There is still a good deal of common sense in the world, and it responds to effort of this kind. To make an enduring and fruitful impression on a community regarding a new subject requires time, and, especially, it requires much repetition, but it can be done by the use of such means, and the sooner we begin the sooner we shall accomplish something.

And now, particularly, I know of nothing else so effective which would cost so little as to reprint this article of Professor Buckhout's in a "slip," to send to the people who are interested in forestry-matters—or who ought to be—everywhere. We could all use it in our letters, and the distribution of a few thousand copies would exert an influence. It would be doing something, and until we do something we do not improve things very much.

New York. *J. B. Harrison.*

The Pepino.

To the Editor of GARDEN AND FOREST:

Sir.—In answer to Dr. Sturtevant's inquiry as regards the Pepo of Peru, I can say it is probably identical with the Pepino of Central America. This Solanum fruit is of the size of a hen's egg or a goose egg; tastes like a melon with a very fine acid; allays thirst readily. I introduced this plant some seven years ago, and it has been tried in various parts of the United States. It has only succeeded in Florida, but has there proved of considerable value. It is one of the finest fruits of the highlands or cooler parts of the tropics.

California Academy of Science, San Francisco. *Gustav Eisen.*

Notes.

The large, bright red, cone-like fruits of *Magnolia umbrella* are now very attractive.

While in almost every other part of the country the Apple crop has signally failed, the trees in the mountain valleys of western North Carolina are loaded with fruit.

Monsieur Edouard André, the distinguished landscape architect of Paris, and one of the editors of the *Revue Horticole*, is now in Montevideo, where he has been called to execute some important public works.

From a recent number of the *Anales* of the University of Quito we learn that a new Acrostichum, found on Mount Pichincha, in Ecuador, at an elevation of more than 10,000 feet, has been named *A. Yatesii*, after Dr. Lorenzo G. Yates, of Santa Barbara, California.

In our notice of the hybrid *Cypripedium Arnoldianum* last week it should have been stated that Messrs. Pitcher & Manda received for it the silver medal of the Massachusetts Horticultural Society. At the same exhibition a certificate of merit was awarded to the Cambridge Botanical Garden for a fine collection of flowers of one of the night-blooming Cereuses (*C. triangularis*).

A pleasant, but rather pathetic, incident that occurred during the meeting of the Forestry Association at Quebec was the visit of the old Huron Chief Sioui and his son in full Indian dress. He was introduced by President Joly, and made the following address: "We are the children of the forest, come to welcome the friends of the forest. I wish you, for my people, joy and success in your good work. When I was a child I lived in the forest; I have always lived in the forest, and I wish to die there. My people are few in number; we are dying away with our home, the forest. Protect us and our home, and you will have the prayers of the Hurons and the gratitude of their hearts."

Perhaps no paper read at the meeting of the Forestry Association at Quebec excited more general interest than one by Mr. Auguste Dupuis, of St. Roch des Aulnais. In this far northern latitude, under unfavorable conditions and at his own expense, Mr. Dupuis has carefully tested almost every variety of tree, both native and foreign, which gives any assurance of success. The results have been carefully noted, and they furnish data that will be invaluable for those wishing to plant trees in the far north. This work has been patiently carried on for many years, and the failures are quite as instructive as the successes. It is the kind of work that ought to be commenced at once at the different experiment stations of the United States.

The annual fruit and vegetable show of the Massachusetts Horticultural Society last week proved an entire success. The vegetables were all of superb quality, and the abundance and excellence of the fruit was remarkable in spite of the discouraging season. One of the most attractive features of the display was the greenhouse grapes from the gardens of Mrs. Lassell, of Whitinsville (Geo. McWilliam, gardener), and Mr. N. T. Kidder, of Milton. Mr. Robert McLeod, gardener to Mr. D. B. Fearing, of Newport, Rhode Island, showed some samples of the Late Crawford peach, which were marvels of orchard-house culture. The extensive collection of miscellaneous fruits from the Massachusetts Agricultural College at Amherst was both interesting and instructive. It would be a good thing if such institutions would more frequently demonstrate their utility in a manner so practical. A rich display of ornamental fruiting shrubs was made by Mr. Jackson Dawson, of the Arnold Arboretum. It represented a host of beautiful and desirable things.

In the Government Crop Report for September the following statement is made by Mr. T. W. Clark, a statistical correspondent for Marathon County, Wisconsin: "The northern half of Wisconsin is one vast berry patch. Strawberries grow profusely in their season; following them comes the Blueberry during the months of July and August, this crop amounting to hundreds of thousands of bushels. Some black Raspberries and a few Service-berries are found. The red Raspberry, Blackberry and Dewberry yield thousands of bushels. Carloads of glass cans are used annually in preserving these for winter use. Thousands of people find occupation in harvesting these spontaneous crops of luscious fruit. The Cranberry comes to perfection in September, rounding out the season. The value of the wild fruit utilized in nothern Wisconsin is estimated at $1,000,000. Three or four times as much goes to waste for want of pickers. The exceeding healthfulness of this portion of the country may be attributed in a great measure to the purity of the water and the profusion of fruits."

Some time ago we spoke of the fragrant Ferns which New Zealanders used to scent their oils and other articles of food. An English florist, Mr. John Dutton, writing of one of these, *Polypodium pustulatum*, in a local paper, says: "The dry fronds of this Fern, placed in rooms or in books, give off a most agreeable perfume, which lasts for years and greatly resembles the odor of the Heliotrope. This scented Fern, it appears, was held sacred by the natives, who for a long time kept the secret to themselves. It grows in the forests on the west coast of New Zealand, and also in the North Island, but in neither place is it common. One or two varieties are met with occasionally, in one of which the fronds are forked, and in another they are lobed. The perfume appears to be strongest on the sori-bearing fronds. This species was introduced into England in 1820, but has, it seems, quite dropped out of commerce, for we have not found it mentioned in any trade list. It would be interesting to know more about it, and whether, if it is still cultivated in this country, its fragrance is as marked as when growing in its native habitat."

Mr. Watson gives in the *Gardeners' Chronicle* a remarkable instance of tenacity of life in a Yucca. Nearly two and a half years ago the trunk of a Yucca, probably *Y. elata* (see vol. ii., p. 560, fig. 146), was received at Kew from Mr. C. G. Pringle as a specimen for the Museum of Woods. It measured fourteen feet in height by one foot in diameter near the base. There was not a vestige of a root upon it, and the top had been sawn off. It was at once placed in the museum, where, of course, the conditions are almost as dry as an oven. A week or two ago two shoots were seen growing out from the top of the trunk, one composed of leaves, the other of flowers. On examination the whole of the trunk proved to be full of sap and as succulent as if it had only just been dug up from the ground. It was, therefore, removed to the temperate-house, where it may now be seen in flower. *Y. elata* is peculiar to the dry desert region west of the Rocky Mountains, between the United States and Mexico. It has erect, stiff, filamentose leaves, and an erect flower-spike ten to twelve feet high; the flowers are four inches across and pure white.

In a San Francisco dispatch to *The Tribune* it is stated that although this is the best year ever known in California for producers of fruit, the fruit-packers will suffer heavily, because of their contracts to deliver dried and canned fruits for about one-half the ruling rates. Early in the season, when reports came from the east of the total failure of fruit, they discredited those concerning the Delaware peach crop, and made contracts on the usual terms for the delivery of fruit this fall. The result is that they are now paying ten cents a pound for prunes which they have agreed to deliver for five cents. The same rates hold good in regard to peaches, pears and other fruits. One large packing firm will lose $50,000 on prunes alone, while several smaller ones will probably go under, as they will be unable to stand the losses. It is a great year, however, for fruit-growers, as prices are about double what they usually are and the crop is large. Even grapes, which have been a drug on the market for several years, bring high prices. Ordinary Zinfandel wine grapes fetch $20 a ton, and large quantities not used for wine have been dried. These will be introduced this winter at the east for stewing and as a substitute for currants.

A month ago we published an account of the famous Holgate Nurseries of James Backhouse & Son in the ancient city of York, and now, with sincere regret, we are called upon to announce the death of the head of the firm. Mr. James Backhouse was more than a nurseryman, for he had inherited a love of botanical science from his father, who, together with his uncle, became the proprietors of the nurseries seventy-five years ago. In early life Mr. Backhouse published a "Monograph of Hieracia," and the close observation which was displayed in that work has characterized his methods of business and study through life. He began to import and cultivate Orchids among the first, and his collectors in various tropical countries discovered many of the best species in cultivation. Besides Orchids special attention has been given at the York Nurseries to the cultivation of Ferns, Conifers, herbaceous and especially alpine plants. The rock garden of this establishment, where these alpine plants are collected and have been cultivated with remarkable success, is one of the best specimens of this class of work, and the plants are very tastefully arranged in the crevices of the immense pile, which rises at times to the dignity of a cliff. Mr. Backhouse was sixty-five years old at the time of his death.